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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,017	06/27/2003	Larry J. Markoski	09800240-0030	8351

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EXAMINER
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YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/609,017

Applicant(s)

MARKOSKI ET AL.

Examiner

Dah-Wei D. Yuan

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>04052004, 09202004</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1745

**FUEL CELL COMPRISING LAMINAR FLOW INDUCED DYNAMIC CONDUCTING  
INTERFACES, ELECTRONIC DEVICES COMPRISING SUCH CELLS, AND  
METHODS EMPLOYING SAME**

Examiner: Yuan

S.N. 10/609,017

Art Unit: 1745

February 15, 2006

***Election/Restrictions***

1. Applicant's election without traverse of Group I-1, claims 1-24, in Paper filed December 22, 2005 is acknowledged. Claim 28 is withdrawn from consideration.

***Claim Rejections - 35 USC § 102/103***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4,6-16,19-24 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ohlsen et al. (US 2004/0058217 A1).

With respect to claims 1,10,21-24, Ohlsen et al. teach a portable microfluidic fuel cell system comprising a first electrode (213) a second electrode (219), a channel contiguous with both the first and the second electrodes, a first liquid (214) in contact with the first electrode and a second liquid in contact with the second electrode, wherein a multistream laminar flow is established between the first and the second liquid. See Figure 2, paragraphs 19 and 20. However, it is the position of the examiner that other properties of said material, such as current density, are inherent, given that the fuel cell system disclosed by Ohlsen et al. and the present application having similar configuration and components. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson, 49 USPQ2d 1949 (1999). Alternatively, it would have been obvious to one of ordinary skill in the art to optimize the construction and operating parameter of the microfluidic fuel cell system of Ohlsen in order to obtain a desirable current density of at least 0.1mA/cm<sup>2</sup>.

With respect to claims 2,7-9,12,19, Ohlsen et al. teach the first liquid comprising an alcohol such as, methanol and ethanol, and the second liquid comprises oxygen, hydrogen peroxide or a combination thereof. See Paragraph 22.

With respect to claims 3,4, Ohlsen et al. teach the first liquid is introduced through the first input and the second liquid is introduced through the second input. See Figure 2.

With respect to claim 6, Ohlsen et al. teach a first outlet is adjacent to the first electrode and a second outlet is adjacent to the second electrode. See Figure 2.

With respect to claim 11, Ohlsen et al. teach the fuel cell further comprising support structures (212,218) which are planar with the surface of the electrodes. See Figure 2.

With respect to claim 13, it is noted that claim is a product-by-process claim. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since Ohlsen’s actual electrode and support structure is similar to that of the Applicant’s, Applicant’s process is not given patentable weight in this claim.

With respect to claim 14,15, Ohlsen et al. teach the use of platinum and ruthenium as the electrode. See Paragraph 32.

With respect to claim 16, the first and the second electrodes are electrically coupled in order to be used as a fuel cell. See Figure 1.

With respect to claim 20, the fuel cell comprises a direct methanol fuel cell. See Paragraph 19.

5. Claims 5,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohlsen et al. (US 2004/0058217 A1) as applied to claims 1-4,6-16,19-24 above, and further in view of Colbow et al. (US 2003/0003336 A1).

Ohlsen et al. disclose a fuel cell system as described above in Paragraph 4. However, Ohlsen et al. do not disclose the use of pump to introduce the liquids. Colbow et al. teach a direct methanol fuel cell, wherein an air pump is used to supply an ambient temperature air stream and a fuel pump is used to provide a mixture of methanol and water to the fuel cell stack. See Paragraph 45. Therefore, it would have been obvious to one of ordinary skill in the art to use a pump to introduce first liquid and a pump to introduce the second liquid to the fuel cell of Ohlsen, because Colbow et al. teach the use of an air pump to supply air stream and a fuel pump to supply methanol and water to the fuel cell system.

With respect to claim 17, Colbow et al. teach the use of a control system to adjust the methanol concentration in responsive to the temperature of the fuel cell. See Paragraph 37. Therefore, it would have been obvious to one of ordinary skill in the art to add a fuel sensor (controller) to the fuel cell of Ohlsen, because Colbow et al. teach the use of a methanol concentration sensor in response to the temperate of the fuel cell system.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohlsen et al. (US 2004/0058217 A1) as applied to claims 1-4,6-16,19-24 above, and further in view of Konrad et al. (US 6,472,091 B1).

Ohlsen et al. disclose a fuel cell system as described above in Paragraph 4. However, Ohlsen et al. do not disclose the use of an oxidant reservoir as the source of oxygen. Konrad et al. teach a direct methanol fuel cell wherein an air reservoir (6) is used to supply the fuel cell system with atmospheric oxygen. See Abstract. Therefore, it would have been obvious to one of

ordinary skill in the art to use an air reservoir to introduce oxygen to the fuel cell of Ohlsen, because Konrad et al. teach the use of an air reservoir to provide oxidant to the fuel cell system.

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-36 of U.S. Patent No. 6,713,206 B2. Although the

conflicting claims are not identical, they are not patentably distinct from each other because the instant application and the '206 patent both claim a fuel cell system comprising a first electrode, a second electrode, a channel, a first liquid and a second liquid, wherein the first liquid and the second liquid flow through the channel. The disclosure of '206 patent differs from Applicant's claims in that '206 patent does not teach a multistream laminar flow is established. However, it would have been obvious to one of ordinary skill in the art to construct a fuel cell comprising a multistream laminar flow of the two liquids wherein the two liquids have to travel parallel to each in order to generate laminar flow.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR



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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan  
February 15, 2006

  
**DAH-WEI YUAN  
PRIMARY EXAMINER**